

Introduction

- What types of problems necessitate the use of ecological models?
- What kinds of ecological models do people tend to build and use?
- What are the advantages and the liabilities of the different approaches?

Reasons for Using Models

- Forecasting or extrapolation
- Working with threatened or endangered populations
- Studing the consequences of assumptions or data limitations
- Testing the plausibility of assumptions regarding mechanisms
- Working with intractable systems
- Developing hypotheses prior to initiating field work

Types of Models

- Mathematical
- Statistical
- Meta-population
- Process-specific simulators
(reserve design, connectivity, etc)
- Life history simulators

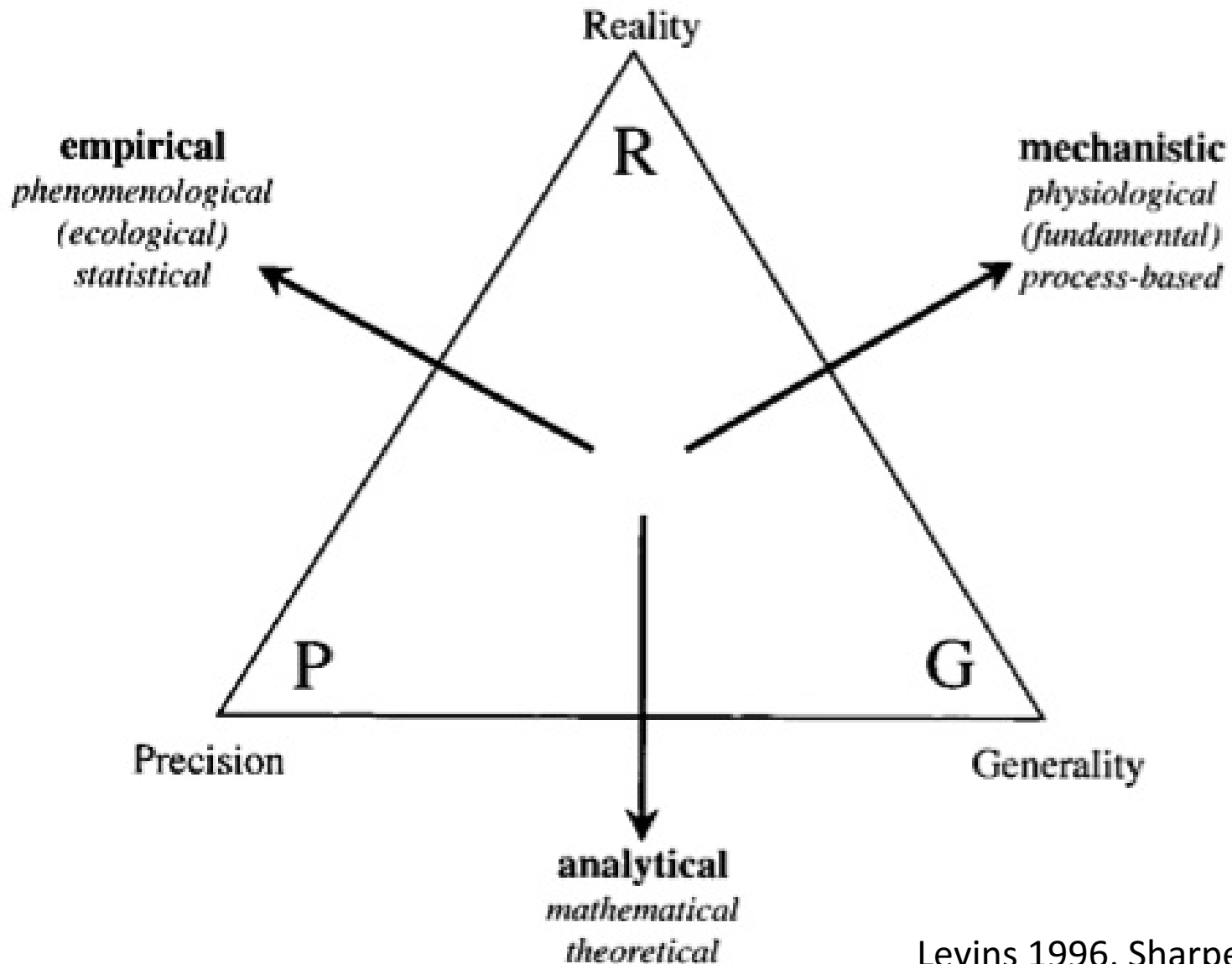
Benefits and Liabilities

- **Mathematical**
Predictive; Can Solve; Universal
Limited Realism; Difficult
- **Statistical**
Describe Data; Universal
Not Predictive; Phenomenological
- **Meta-Population**
Landscape Structure; Movement
Limited Realism; Ideosyncratic
- **Process-Specific Simulators**
Tailored to Specific Questions
Many Processes are Ignored

Benefits and Liabilities (cont.)

- Life History Simulators
 - Process-based ; Potentially Realistic
 - Complex; Ideosyncratic

Reality, Generality, and Precision



Levins 1996, Sharpe 1990